

RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/658,834B
Source: 1FW16
Date Processed by STIC: 2/18/05

ENTERED

Best Available Copy

CRF Errors Edited by the STIC Systems
Branch

Serial Number: 10/658,834B

CRF Edit Date: 7/20/05
Edited by: Ar

___ Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line

___ Corrected the SEQ ID NO. Sequence numbers edited were:

___ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

S Deleted: S invalid beginning/end-of-file text ; ___ page numbers

___ Inserted mandatory headings/numeric identifiers, specifically:

___ Moved responses to same line as heading/numeric identifier, specifically:

___ Other:

Revised 09/09/2003



IFW16

RAW SEQUENCE LISTING

DATE: 07/20/2005

PATENT APPLICATION: US/10/658,834B

TIME: 13:55:24

Input Set : N:\AMC\658834.txt

Output Set: N:\CRF4\07202005\J658834B.raw

4 <110> APPLICANT: Gantier, Rene
 5 Guyon, Thierry
 6 Drittanti, Lila
 7 Vega, Manuel
 9 <120> TITLE OF INVENTION: Rational Evolution of Cytokines for Higher Stability, the
 Cytokines
 10 Encoding Nucleic Acid Molecules
 12 <130> FILE REFERENCE: 38751-922
 14 <140> CURRENT APPLICATION NUMBER: 10/658,834B
 15 <141> CURRENT FILING DATE: 2003-09-08
 17 <150> PRIOR APPLICATION NUMBER: 60/457,135
 18 <151> PRIOR FILING DATE: 2003-03-21
 20 <150> PRIOR APPLICATION NUMBER: 60/409,898
 21 <151> PRIOR FILING DATE: 2002-09-09
 23 <160> NUMBER OF SEQ ID NOS: 1306
 25 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 27 <210> SEQ ID NO: 1
 28 <211> LENGTH: 165
 29 <212> TYPE: PRT
 30 <213> ORGANISM: Homo sapiens
 32 <400> SEQUENCE: 1
 33 Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
 34 1 5 10 15
 35 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
 36 20 25 30
 37 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
 38 35 40 45
 39 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
 40 50 55 60
 41 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
 42 65 70 75 80
 43 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
 44 85 90 95
 45 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
 46 100 105 110
 47 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
 48 115 120 125
 49 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
 50 130 135 140
 51 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
 52 145 150 155 160
 53 Leu Arg Ser Lys Glu
 54 165
 55 <210> SEQ ID NO: 2

RAW SEQUENCE LISTING

DATE: 07/20/2005

PATENT APPLICATION: US/10/658,834B

TIME: 13:55:24

Input Set : N:\AMC\658834.txt

Output Set: N:\CRF4\07202005\J658834B.raw

56 <211> LENGTH: 165

57 <212> TYPE: PRT

58 <213> ORGANISM: Artificial Sequence

60 <220> FEATURE:

61 <223> OTHER INFORMATION: D2A Mutant IFN-alpha 2b

63 <400> SEQUENCE: 2

```

64 Cys Ala Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
65 1 5 10 15
66 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
67 20 25 30
68 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
69 35 40 45
70 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
71 50 55 60
72 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
73 65 70 75 80
74 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
75 85 90 95
76 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
77 100 105 110
78 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
79 115 120 125
80 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
81 130 135 140
82 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
83 145 150 155 160
84 Leu Arg Ser Lys Glu
85 165

```

86 <210> SEQ ID NO: 3

87 <211> LENGTH: 165

88 <212> TYPE: PRT

89 <213> ORGANISM: Artificial Sequence

91 <220> FEATURE:

92 <223> OTHER INFORMATION: P4A Mutant IFN-alpha 2b

94 <400> SEQUENCE: 3

```

95 Cys Asp Leu Ala Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
96 1 5 10 15
97 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
98 20 25 30
99 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
100 35 40 45
101 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
102 50 55 60
103 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
104 65 70 75 80
105 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
106 85 90 95
107 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
108 100 105 110

```

RAW SEQUENCE LISTING

DATE: 07/20/2005

PATENT APPLICATION: US/10/658,834B

TIME: 13:55:24

Input Set : N:\AMC\658834.txt

Output Set : N:\CRF4\07202005\J658834B.raw

```

109 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
110      115      120      125
111 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
112      130      135      140
113 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
114 145      150      155      160
115 Leu Arg Ser Lys Glu
116      165
117 <210> SEQ ID NO: 4
118 <211> LENGTH: 165
119 <212> TYPE: PRT
120 <213> ORGANISM: Artificial Sequence
122 <220> FEATURE:
123 <223> OTHER INFORMATION: Q5A Mutant IFN-alpha 2b
125 <400> SEQUENCE: 4
126 Cys Asp Leu Pro Ala Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
127 1      5      10      15
128 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
129      20      25      30
130 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
131      35      40      45
132 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
133      50      55      60
134 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
135 65      70      75      80
136 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
137      85      90      95
138 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
139      100     105     110
140 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
141      115     120     125
142 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
143      130     135     140
144 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 145     150     155     160
146 Leu Arg Ser Lys Glu
147      165
148 <210> SEQ ID NO: 5
149 <211> LENGTH: 165
150 <212> TYPE: PRT
151 <213> ORGANISM: Artificial Sequence
153 <220> FEATURE:
154 <223> OTHER INFORMATION: T6A Mutant IFN-alpha 2b
156 <400> SEQUENCE: 5
157 Cys Asp Leu Pro Gln Ala His Ser Leu Gly Ser Arg Arg Thr Leu Met
158 1      5      10      15
159 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
160      20      25      30
161 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln

```

RAW SEQUENCE LISTING

DATE: 07/20/2005

PATENT APPLICATION: US/10/658,834B

TIME: 13:55:24

Input Set : N:\AMC\658834.txt

Output Set: N:\CRF4\07202005\J658834B.raw

```

162          35          40          45
163 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
164          50          55          60
165 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
166 65          70          75          80
167 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
168          85          90          95
169 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
170          100          105          110
171 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
172          115          120          125
173 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
174          130          135          140
175 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
176 145          150          155          160
177 Leu Arg Ser Lys Glu
178          165
179 <210> SEQ ID NO: 6
180 <211> LENGTH: 165
181 <212> TYPE: PRT
182 <213> ORGANISM: Artificial Sequence
184 <220> FEATURE:
185 <223> OTHER INFORMATION: H7A Mutant IFN-alpha 2b
187 <400> SEQUENCE: 6
188 Cys Asp Leu Pro Gln Thr Ala Ser Leu Gly Ser Arg Arg Thr Leu Met
189 1          5          10          15
190 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
191          20          25          30
192 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
193          35          40          45
194 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
195          50          55          60
196 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
197 65          70          75          80
198 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
199          85          90          95
200 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
201          100          105          110
202 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
203          115          120          125
204 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
205          130          135          140
206 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
207 145          150          155          160
208 Leu Arg Ser Lys Glu
209          165
210 <210> SEQ ID NO: 7
211 <211> LENGTH: 165
212 <212> TYPE: PRT

```

RAW SEQUENCE LISTING

DATE: 07/20/2005

PATENT APPLICATION: US/10/658,834B

TIME: 13:55:24

Input Set : N:\AMC\658834.txt

Output Set: N:\CRF4\07202005\J658834B.raw

213 <213> ORGANISM: Artificial Sequence

215 <220> FEATURE:

216 <223> OTHER INFORMATION: S8A Mutant IFN-alpha 2b

218 <400> SEQUENCE: 7

```

219 Cys Asp Leu Pro Gln Thr His Ala Leu Gly Ser Arg Arg Thr Leu Met
220 1          5          10          15
221 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
222          20          25          30
223 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
224          35          40          45
225 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
226          50          55          60
227 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
228 65          70          75          80
229 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
230          85          90          95
231 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
232          100         105         110
233 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
234          115         120         125
235 Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
236          130         135         140
237 Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
238 145         150         155         160
239 Leu Arg Ser Lys Glu
240          165

```

242 <210> SEQ ID NO: 8

243 <211> LENGTH: 165

244 <212> TYPE: PRT

245 <213> ORGANISM: Artificial Sequence

247 <220> FEATURE:

248 <223> OTHER INFORMATION: L9A Mutant IFN-alpha 2b

250 <400> SEQUENCE: 8

```

251 Cys Asp Leu Pro Gln Thr His Ser Ala Gly Ser Arg Arg Thr Leu Met
252 1          5          10          15
253 Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
254          20          25          30
255 Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
256          35          40          45
257 Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
258          50          55          60
259 Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
260 65          70          75          80
261 Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
262          85          90          95
263 Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
264          100         105         110
265 Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
266          115         120         125

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/658,834B

DATE: 07/20/2005
TIME: 13:55:25

Input Set : N:\AMC\658834.txt
Output Set: N:\CRF4\07202005\J658834B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:231; N Pos. 1,22

VERIFICATION SUMMARY

DATE: 07/20/2005

PATENT APPLICATION: US/10/658,834B

TIME: 13:55:25

Input Set : N:\AMC\658834.txt

Output Set: N:\CRF4\07202005\J658834B.raw

L:6720 M:283 W: Missing Blank Line separator, <300> field identifier
L:7153 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7154 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7155 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7156 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7157 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7160 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:231 after pos.:0

**Raw Sequence Listing before editing,
for reference only**



IFW16

RAW SEQUENCE LISTING

DATE: 07/18/2005

PATENT APPLICATION: US/10/658,834B

TIME: 14:11:38

Input Set : N:\DA\pto.da.txt

Output Set: N:\CRF4\07152005\J658834B.raw

4 <110> APPLICANT: Gantier, Rene
 5 Guyon, Thierry
 6 Drittanti, Lila
 7 Vega, Manuel
 9 <120> TITLE OF INVENTION: Rational Evolution of Cytokines for Higher Stability, the
 Cytokines
 10 Encoding Nucleic Acid Molecules
 12 <130> FILE REFERENCE: 38751-922
 14 <140> CURRENT APPLICATION NUMBER: 10/658,834B
 15 <141> CURRENT FILING DATE: 2003-09-08
 17 <150> PRIOR APPLICATION NUMBER: 60/457,135
 18 <151> PRIOR FILING DATE: 2003-03-21
 20 <150> PRIOR APPLICATION NUMBER: 60/409,898
 21 <151> PRIOR FILING DATE: 2002-09-09
 23 <160> NUMBER OF SEQ ID NOS: 1306
 25 <170> SOFTWARE: FastSEQ for Windows Version 4.0

*Does Not Comply
 Corrected Diskette Needed*

ERRORED SEQUENCES

38737 <210> SEQ ID NO: 1306
 38738 <211> LENGTH: 41
 38739 <212> TYPE: DNA
 38740 <213> ORGANISM: Artificial Sequence
 38742 <220> FEATURE:
 38743 <223> OTHER INFORMATION: primer reverse IFNA-E159Q
 38745 <400> SEQUENCE: 1306
 38746 aacatatgtg tgatctgcct caaacccaca gcctgggtag c 41
 E--> 38748 115
 E--> 38751 114

VERIFICATION SUMMARY

DATE: 07/18/2005

PATENT APPLICATION: US/10/658,834B

TIME: 14:11:42

Input Set : N:\DA\pto.da.txt

Output Set: N:\CRF4\07152005\J658834B.raw

L:7153 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7154 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7155 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7156 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7157 M:259 W: Allowed number of lines exceeded, <223> Other Information:
L:7160 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:231 after pos.:0
L:38748 M:254 E: No. of Bases conflict, this line has no nucleotides.
M:254 Repeated in SeqNo=1306